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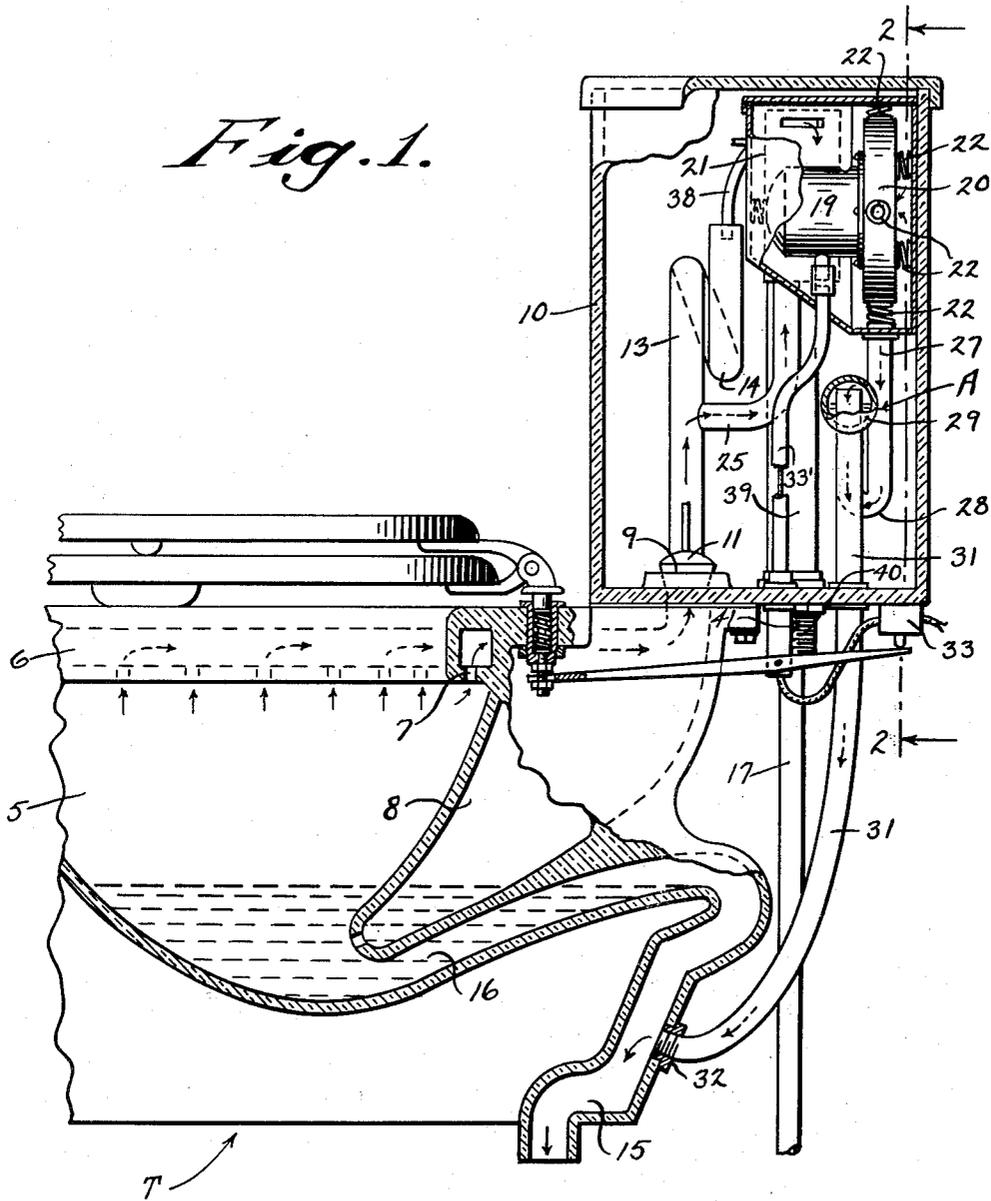
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TOILET BOWL VENTILATING APPARATUS

Filed May 24, 1957

2 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

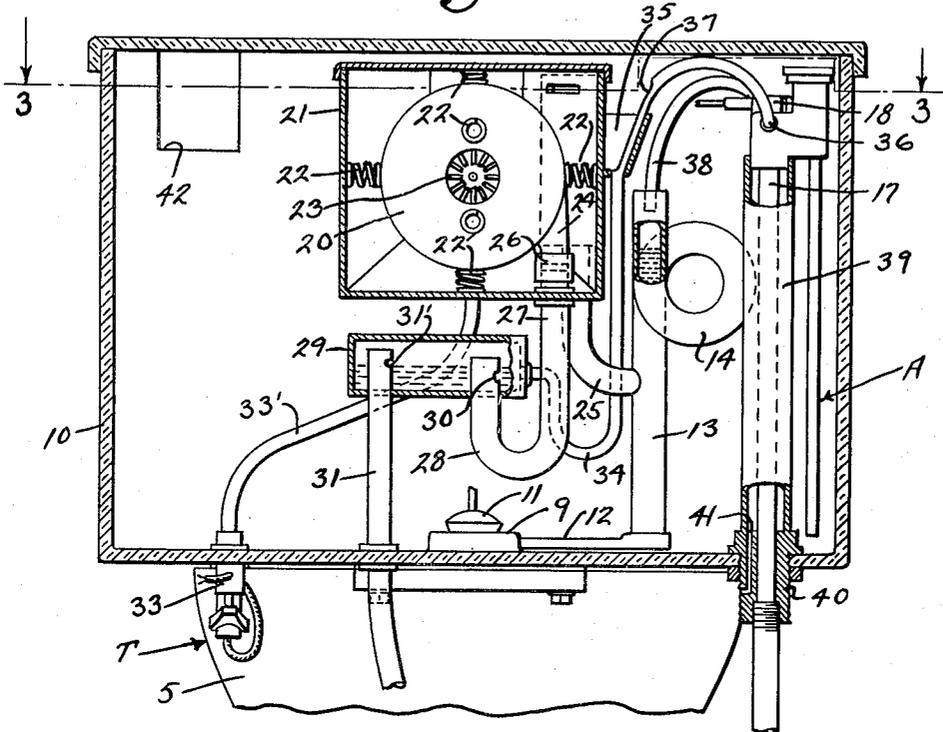
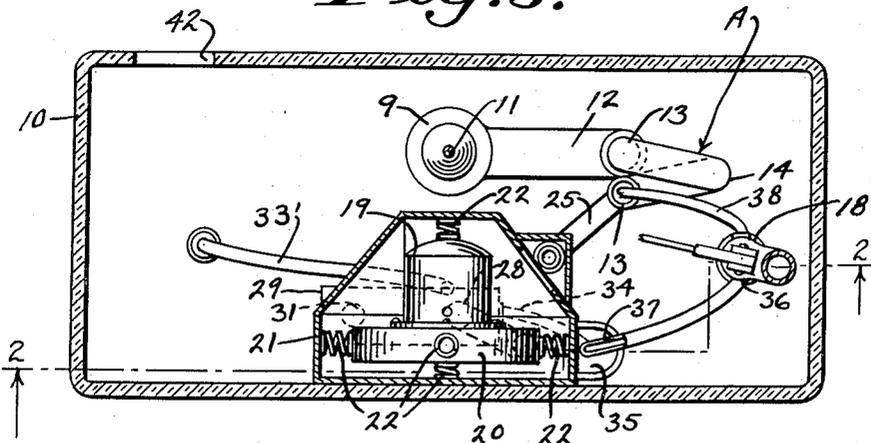


Fig. 3.



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TOILET BOWL VENTILATING APPARATUS

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2 Claims. (Cl. 4—213)

This invention appertains to ventilated toilets and is an improvement over my prior Patent Numbers 1,931,052; 2,227,920 and 2,297,935, issued respectively to me October 17, 1933, January 7, 1941, and October 6, 1942. In these patents, I have illustrated means for creating an air suction in the bowls of toilets during the use thereof for eliminating objectionable odors.

Much difficulty has been experienced by the makers of ventilated toilets in having such toilets meet with the approval of State and municipal plumbing codes. One primary objection is the connection of the outlet odor conducting conduit with the drain pipe (leading to the soil pipe) of the toilet below the water trap in the bowl.

One of the salient objects of my present invention is to provide a novel arrangement of water traps housed in the flush tank of the toilet between the outlet odor conducting conduit and the bowl drain pipe, so that objectionable odors, vapors and the like from the soil pipe cannot enter into the room containing the toilet.

Another important object of my invention is the provision of means for permitting the free flow of air through such traps during the operation of the suction fan and the maintenance of the water in the traps after the operation of the suction fan.

A further object of my invention is to provide a jacket for the water inlet pipe extending into the flush tank, so that in case of leakage in said pipe there will be no possibility of water from the tank being syphoned into the water main, should a vacuum occur in the service line.

A further object of my invention is to provide novel means for suspending the motor and fan in the housing within the flush tank in such a manner that vibration and noise will be reduced to a minimum.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described and claimed, and illustrated in the accompanying drawings, in which drawings,

Figure 1 is a fragmentary side elevational view with parts broken away and in section showing my improved ventilated toilet;

Figure 2 is a sectional view through the tank and parts housed therein taken on the line 2—2 of Figure 1, looking in the direction of the arrows, and

Figure 3 is a horizontal sectional view through the flush tank taken on the line 3—3 of Figure 2, looking in the direction of the arrows.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A generally indicates my novel ventilating attachment for a toilet T.

The toilet T includes a toilet bowl 5 having formed therein the flush ring 6. The flush ring is provided with a plurality of outlet openings 7 communicating with the upper end of the bowl. The flush ring in turn communicates with an enlarged passageway 8 in the bowl and this passageway 8 in turn communicates with the main water

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outlet 9 of the flush tank 10. The flush tank 10 can be formed integral with or separate from the bowl 5.

The water outlet 9 of the flush tank 10 can be controlled by any preferred type of valve 11. Communicating with the outlet 9 below the valve 11, by a conduit 12, is an upright overflow pipe 13. This pipe, in accordance with my invention, is coiled to provide a circular loop 14, which constitutes a water trap, the purpose of which will later appear.

The bowl 5 communicates with a drain pipe 15 through a suitable water seal or trap 16 formed in the toilet bowl. Extending into the flush tank 10 through the lower wall thereof is a water supply pipe 17. Flow of water from the pipe 17 into the flush tank 10 is controlled by any suitable type of valve 18, and this valve 18 can be considered of the type now generally employed in flush tanks and operated by a float (not shown).

My improved toilet ventilating attachment A includes an electric motor 19 of a desired size and rating and this motor rotates a suction fan 20. The motor 19 and the suction fan 20 are housed within a casing 21 which can be secured to the rear wall of the flush tank 10. The motor 19 and the fan 20 are preferably suspended within the casing 21 by means of coil springs 22 so that vibration of the motor and noise incident thereto will not be transmitted out of the flush tank 10. The suction fan 20 is provided with an axial inlet 23 and a tangentially extending outlet 24. The casing 21 has communicating therewith, preferably in the lower end thereof, an air conducting pipe 25, and this pipe communicates with the overflow pipe 13 below the water trap or seal 14 and hence the casing 21 communicates with the flush ring 6 at all times through the overflow pipe 13, conduit 12 and passageway leading from the opening 9 to the flush ring. Communicating with the fan outlet 24 through a flexible coupling 26 is an air outlet pipe 27. This pipe 27 extends through the lower wall of the casing 21 and has formed therein a U-shaped water seal or trap 28. One leg of the trap 28 communicates with a water replenishing tank or reservoir 29. The means for supplying water to a certain level to the reservoir 29 will be later described, but it is to be noted that the water only extends to a certain level within the reservoir and that the leg of the trap which extends into the reservoir rises above this level and that the leg of the trap has formed therein below the water level a water inlet opening 30. Communicating with the reservoir 29 above the water level therein is an air outlet pipe 31 and this pipe extends outwardly of the flush tank 10 to the drain pipe 15 and the pipe 31 is connected with the drain pipe 15 for communication therewith by a suitable coupling 32. An opening 31' is formed in the upper end of pipe 31 and this opening controls the water level in the reservoir 29.

Current for the motor 19 can be supplied from any suitable source of electrical energy, such as the usual house current and, as in my previous patent, a control switch 33 can be mounted on the bowl or flush tank 10 and this switch is actuated for closing a circuit through the motor 19 when weight is placed on the toilet seat. As illustrated, the switch 33 is placed on the tank 10 remote from the seat and is insulated from the hinges of the toilet seat. Also, as shown, the wiring from the switch 33 to the motor 19 extends through a conduit 33' which leads out of the tank 10. The upper end of the conduit 33' extends through the housing 21 and communicates with the interior of the casing of the motor 19. A flexible coupling is interposed in the length of the conduit 33' so as to prevent vibrations from the motor 19 being transmitted to the conduit 33'.

From the description so far, it can be seen that when the switch 33 is closed, the motor 19 and fan 20 will be set in operation and the fan will create a suction within the

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casing 21, pipe 25, overflow pipe 13, connection 12 and the flush ring 6 through outlet 9 below valve 11. The fan 20 will discharge the air into pipe 27, into reservoir 29 above its water level into pipe 31 and drain pipe 15.

Now referring to the means for supplying water to the reservoir 29, I provide a water conducting tube 34 which leads into the reservoir. This tube 34 extends through a cup 35 carried by the casing 31 to the valve 18, as at 36, and when water is being replenished to the tank 10, after the flushing of the bowl 5, water will flow into this tube. A portion of the tube 34 is cut away, as at 37, so as to act as a vacuum breaker in case of a vacuum in the water line. The vacuum breaker opening 37 prevents the possibility of anything being drawn back from the sewer into the water pipe 10. The cup 35 functions to catch water from the upper portion of the tube 34 and water caught in the cup will again flow into the tube 34 and into the reservoir 29. It is to be noted that the casing 21 not only acts as means for housing the motor and fan but also acts as a sound muffler for the motor and fan and air flowing into the fan.

Water for the trap 14 formed in the overflow 13 is provided by means of a tube 38 leading from the valve 18 and when this valve is opened water will flow into the tube 38 and into the trap.

In case the water inlet pipe 17, which extends into the tank 10, develops a leak, I provide means for draining off such leakage. This means includes a jacket 39 surrounding the pipe 17. The lower end of the jacket is connected by a coupling 40 to the lower wall of the tank 10 and this coupling has a drain by-pass passageway 41 formed therein. This prevents the possibility of water from flush tank 10 being syphoned into the water supply pipe, and hence the water main, should a vacuum occur in the service line.

The flush tank 10 adjacent to its upper end is provided with a cut-out portion 42 and this cut-out portion extends down the tank 10 to a point half way between the outlet of the valve 18 and the top of the overflow pipe 13. The purpose of this cut-out portion 42 is to prevent any possibility of any water being syphoned into the valve 18 should pipe 13 become clogged, and obviously, water will flow out of tank 10 through cut-out portion 42. Thus, the water level never can reach the inlet of valve 18.

From the foregoing description, it can be seen that I have provided a novel and simple means for exhausting odors from a bowl into the bowl drain pipe without any

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danger of foul odors from the drain pipe entering the room housing the toilet.

Various changes in details may be made without departing from the spirit or the scope of this invention, but what I claim as new is:

1. In a toilet including a toilet bowl having a flush ring, a water trap below the flush ring and a drain pipe leading from the trap, a flush tank having a flush opening communicating with the bowl and flush ring, an overflow pipe in the flush tank communicating with the flush opening, a water supply pipe extending into a flush tank and a valve for controlling the flow of water from said supply pipe into said tank; a casing in said tank, a motor and fan enclosed within said casing, said overflow pipe having a water seal, an air intake pipe communicating with the casing and with the overflow pipe between the seal and the flush opening, an air discharge pipe communicating with the outlet of the suction fan and extending beyond said casing and having a water trap formed therein, a water reservoir within said flush tank, one leg of said water trap of said air discharge pipe extending into the reservoir above the water level therein and said leg having an orifice below the water level in said reservoir, a second air discharge pipe communicating with the drain pipe and extending into said water reservoir above the water level therein, and a water supply tube leading from said valve to said water reservoir for supplying water to said reservoir upon the opening of said valve, a water receiving cup disposed above the water reservoir, a tube for supplying water to said cup and reservoir communicating with the valve and said reservoir, said tube having a cut-out portion within said cup.

2. In a toilet as defined in claim 1, and a second tube communicating with the seal in said overflow pipe and said valve for supplying water to said seal upon the opening of the valve.

References Cited in the file of this patent

UNITED STATES PATENTS

744,766	Luff	Nov. 15, 1904
838,601	Willms	Dec. 18, 1906
2,195,797	Groeniger	Apr. 2, 1940
2,227,920	Baither	Jan. 7, 1941
2,297,935	Baither	Oct. 6, 1942
2,603,797	Baither	July 22, 1952